ColorBoard 708+/SE30 *Owner's Manual*

RasterOps®

ColorBoard 708+/SE30

Owner's Manual

February, 1990

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Preface

In the preface:

About the ColorBoard 708+/SE30

How to Use this Manual

About the ColorBoard 708+/SE30

The ColorBoard 708+/SE30 system is a high quality color display system for the Macintosh SE/30. After installing the ColorBoard 708+/SE30, you can display up to 256 colors on a 640 x 480, 800 x 600 or 1024 x 768 monitor.

Software included with the ColorBoard 708+/SE30 system lets you access several screen management features: Pan, Zoom and Extended Desktop. You control these features by way of a special window in the Monitors Control Panel.

Pan and Zoom

With the Zoom feature you can instantly magnify any part of the screen. If you need to look at something close-up, you can use a special command key to bring that part of your screen image up to four times closer, then zoom out to normal size instantaneously.

Whenever you zoom in, the Pan feature becomes active, allowing you to pan to all sides of the screen. With panning, you can move around the enlarged screen image without zooming out to full view.

Use the Pan and Zoom features in the Finder and in any other application. Use the default command keys to control this feature, or use the PZE (Pan/Zoom/Extended Desktop) window to designate your own command keys. The PZE window even allows you to adjust the panning rate.

The Extended Desktop

The Extended Desktop feature increases the effective viewing area of your monitor. Like any graphics card, the ColorBoard 708+/SE30 card keeps track of the image on your screen by storing the image in something called video memory. The ColorBoard 708+/SE30 has enough video memory to display 256 colors on a 1024 x 768 monitor.

What happens to the video memory when you use the ColorBoard 708+/SE30 card with an 800 x 600 or 640 x 480 monitor, or when you display only 2, 4, or 16 colors on screen? In these cases, the images displayed don't occupy all of the card's memory.

When you enable the Extended Desktop feature, the ColorBoard 708+/SE30 card uses its extra memory to store information for an enlarged screen area. For example, if you use the ColorBoard 708+/SE30 with a 640 x 480 monitor, you can select a 1024 x 768 desktop size. Obviously, your monitor remains the same size, but the ColorBoard 708+/SE30 stores a 1024 x 768 "picture" of the screen in video RAM. You access this extra area by panning.

For an even larger screen area, you can extend the desktop size to 2048 x 768, 4096 x 768, or 8192 x 768 pixels. You can change Extended Desktop size or disable the Extended Desktop at any time.

How to Use this Manual

The first three chapters of this manual show you how to install and use the software that arrived with the ColorBoard 708+/SE30. Chapter One helps you determine which files you need to install, and explains, step-by-step, how to install these files.

Chapter Two explains the Pan, Zoom and Extended Desktop features, and Chapter Three reviews the Monitors Control Panel.

Chapter Four contains installation instructions for the ColorBoard 708+/SE30 card. RasterOps strongly recommends that a qualified service technician install the ColorBoard 708+/SE30 card.

Chapter Five is a troubleshooting guide. Consult this chapter if you have problems operating the ColorBoard 708+/SE30.

CHAPTER 1

Installing the Software

Contents

In this chapter:

What Software should you Install?

Software Installation

What Software should you Install?

One 800K disk arrived with the ColorBoard 708+/SE30 system. This disk contains four files: RasterOps Monitors Extension, 32-bit QuickDraw, General and Monitors, version 4.0 or later. Whether or not you need to install any of these files depends on your present system configuration.

To use the Pan and Zoom features, you must install RasterOps Monitors Extension and Monitors, *version 4.0 or later,* in your System Folder.

NOTE: Regardless of which version of Apple's System Software you use, the Monitors file must be version 4.0 or later. The Monitors 4.0 file is included on the 800K disk that arrived with the ColorBoard 708+/SE30.

To use the Extended Desktop feature, you must install 32-bit QuickDraw. Because 32-bit QuickDraw requires Apple's system 6.0.3 or later, you must use System 6.0.3 or later, including 32-bit QuickDraw, Monitors (version 4.0 or later) and General, to access the Extended Desktop feature.

Use the following chart as a quick reference for determining which software you should install.

NOTE: If you are using the ColorBoard 708+/SE30 with an 800 x 600 or 640 x 480 monitor, an image will not appear on the ColorBoard 708+/SE30 monitor until you install the RasterOps Monitors Extension and designate your monitor's size. "Selecting Monitor Resolution" in Chapter Two explains how to select the correct size for your monitor.

To use:	Install:
ColorBoard at 1024 x 768, no features	No files
Pan and Zoom	Monitors 4.0, Monitors Extension
Pan, Zoom, Extended Desktop	All files

Figure 1.1: Quick software reference

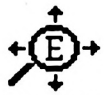
Software Installation

The following pages explain how to install the files that arrived with the ColorBoard 708+/SE30. Refer to the preceding section, "What software should you install?" to determine which of these files you need to install.

Installing the RasterOps Monitors Extension

To install the RasterOps Monitors Extension file:

1. **Copy the RasterOps Monitors Extension file** from the 800K disk provided to the System Folder of your startup disk.
2. **Restart the Macintosh.**
3. **Configure the Pan, Zoom and Extended Desktop options in the Monitors Control Panel** (refer to Chapter Four of this manual).



RasterOps Monitors Extension

NOTE: The RasterOps Monitors Extension file requires that the system file "Monitors," *version 4.0 or later,* be installed in your System Folder. The following section, "Installing the Monitors File" explains how to install the new Monitors file.

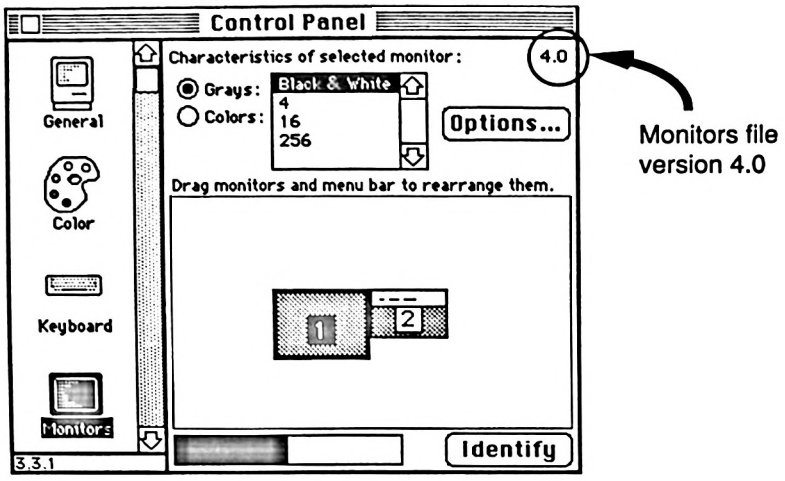


Figure 1.2: The Monitors Control Panel

Installing the Monitors File

To verify that you are using Monitors version 4.0 or later:

1. **Select Control Panel** from the Apple menu. All cdevs appear in the left-hand window of the Control Panel.

2. **Click once on the Monitors cdev** to bring up the Monitors Control Panel. The Monitors file version appears in the upper-right corner of the Monitors Control Panel, as shown above.

If the number in the upper-right corner is less than 4.0, refer to the following instructions to install the Monitors 4.0 file that arrived with the ColorBoard 708+/SE30.

To install the new Monitors file:

NOTE: If you plan to use the Extended Desktop feature as well as the Pan and Zoom features, skip this section and follow the instructions in the "Installing 32-bit QuickDraw" section on page 9.

1. **Locate the Monitors file** on the 800K disk provided by RasterOps. The Monitors file is inside the 32-bit QuickDraw Folder.

2. **Copy the Monitors file to the System Folder** of your startup disk. A dialog asks if you wish to replace the current Monitors file. Click **Yes**.

3. **Restart** the Macintosh.

4. **Reconfigure the Monitors Control Panel.** Bring up the Monitors Control Panel by clicking the Monitors cdev in the Control Panel window, then select the number of colors or grays you wish to display. Chapter Three explains how to configure the Monitors Control Panel.

Installing 32-bit QuickDraw

The Extended Desktop feature requires 32-bit QuickDraw. If you are using Apple's System Software version 6.0.3 or later and wish to use the Extended Desktop feature, follow the instructions below to install 32-bit QuickDraw.

NOTE: If you are not already using System 6.0.3 or later, refer to the instructions in your Macintosh System Software User's Guide to install this software on your startup disk.

To install 32-bit QuickDraw:

1. **Locate the files named 32-bit QuickDraw, Monitors, and General,** on the 800K disk provided by RasterOps.

2. **Copy the 32-bit QuickDraw, Monitors and General files to the System Folder** of your startup disk.

3. **Restart** the Macintosh.

32-Bit QuickDraw

Monitors

General

CHAPTER 2

Using the Software Features

Contents

In this chapter:

Accessing the PZE Control Panel

Selecting Monitor Size

The Pan/Zoom Window

The Options Window

Enabling the Extended Desktop

Accessing the PZE Control Panel

The PZE (Pan/Zoom/Extended Desktop) Control Panel consists of two windows: the Pan/Zoom window and the Options window. The Pan/Zoom window controls the Pan and Zoom features. The Options window controls the Extended Desktop and Center Dialog features.

NOTE: Like all Monitors Extension files, the RasterOps Monitors Extension file must reside in your System Folder in order for you to access the PZE Control Panel.

To access the PZE settings:

1. Choose the Control Panel desk accessory from the Apple menu.

2. Click once on the Monitors cdev. The Monitors Control Panel appears.

3. To bring up the Pan/Zoom window, do either of the following: a) click the Options button in the Monitors Control Panel, or b) double-click the gray rectangle that corresponds to the ColorBoard 708+/SE30 monitor.

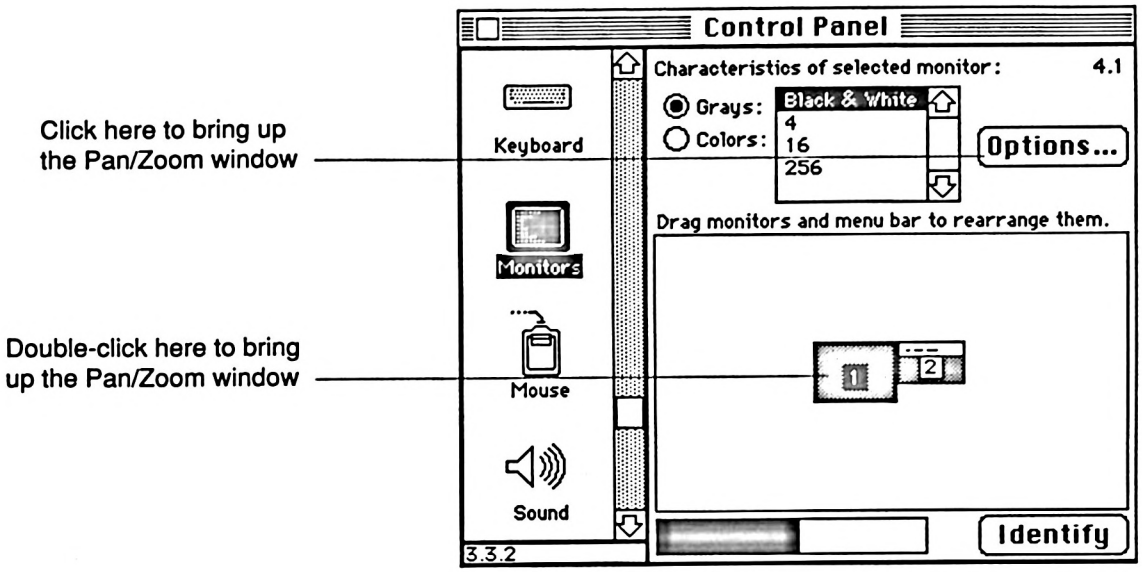


Figure 2.1: Bringing up the Pan/Zoom window

Selecting Monitor Size

To select the correct size for your monitor, click once to select the correct resolution for your monitor.

1. **Bring up the Pan/Zoom window.**
2. **Locate the box named "Select monitor type."**

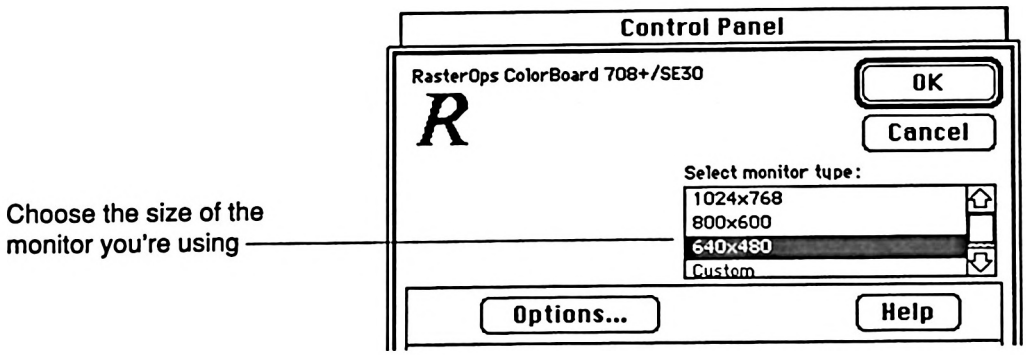
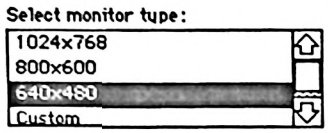


Figure 2.2: Selecting monitor size

The **Select monitor type** box contains a list of all possible resolutions for the ColorBoard 708+/SE30.

3. **Click once to select the correct resolution for your monitor.**



If you have installed a custom oscillator on the ColorBoard 708+/SE30 card, choose "Custom." If you choose "Custom" without having installed a custom oscillator, monitor resolution defaults to 1024 x 768.

NOTE: If you wish to enable the extended desktop, refer to the Extended Desktop section in this chapter.

4. **Restart the Macintosh.**

When you restart, the RasterOps startup screen appears on the ColorBoard 708+/SE30 monitor. The ROM version of the ColorBoard 708+/SE30 card appears in the upper-right corner of the ColorBoard 708+/SE30 screen.

The Pan/Zoom Window

Options...

Click this button to bring up the Extended Desktop, Center Cursor and Center Dialog options.

Help

Click the Help button to bring up a box that explains the Pan/Zoom window.

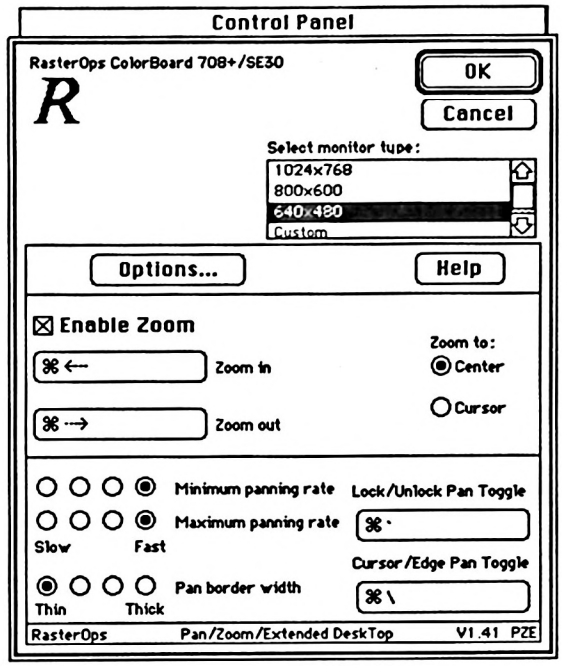


Figure 2.3: The Pan/Zoom window

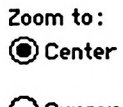
The Zoom Feature

Enable Zoom

Initially the Zoom feature defaults to "Enabled." To disable Zoom, click once on the Enable Zoom box to deselect it.

NOTE: When Zoom is disabled, the desktop returns to 1x zoom and Panning is also disabled, unless the Extended Desktop feature is enabled.

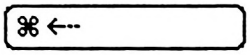
Zoom to:

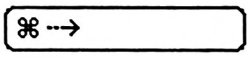


Center: Zooms to screen center.

Cursor: Zooms to cursor location.

☒ **Enable Zoom**



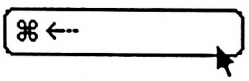


Δ The **Zoom in** key command defaults to Command-← (Command-Cursor left).

Δ The **Zoom out** key command defaults to Command-→ (Command-Cursor right).

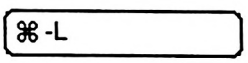
To designate a different key sequence as the Zoom in or Zoom out command:

1. **Click once in the Zoom in or Zoom out field.**



Clicking once in the Zoom field selects it.

2. **Press any key or combination of keys.**



You can use the keypad and function keys, as well as the standard keyboard, to designate the **Zoom in** or **Zoom out** command.

Command-L is an example of a correct key sequence. Another example is Command-Option-H. If you enter an inappropriate key sequence, the Macintosh beeps and reverts to the previous key sequence.

Each time you click either the **Zoom in** or the **Zoom out** box, zooming is temporarily disabled. Zooming is re-enabled when you enter a new key sequence.

CAUTION: Be aware of assigning key sequences you may already use in specific programs or as macros. If you assign a key sequence that has another function, Zoom will override the other function as long as Zoom is enabled.

To Zoom in:

1x to 2x	enter the designated **Zoom in** key sequence.
2x to 4x	enter the **Zoom in** key sequence again.
1x to 4x	enter the **Zoom in** key sequence twice.

To Zoom out:

4x to 2x	enter the designated **Zoom out** key sequence.
2x to 1x	enter the **Zoom out** key sequence again.
4x to 1x	enter the **Zoom out** key sequence twice.

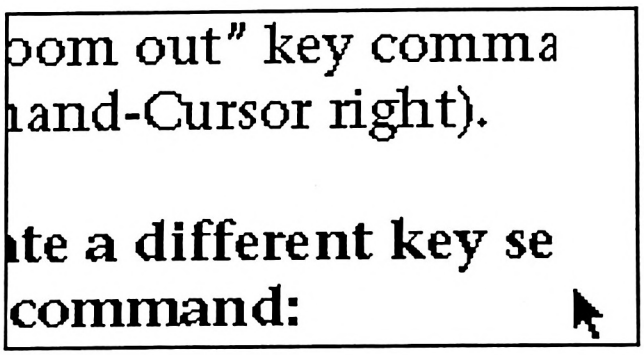


Figure 2.4: 2x Zoom

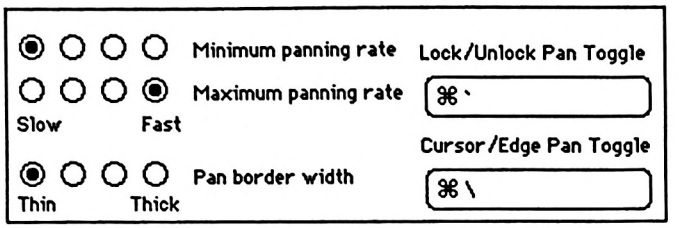


Figure 2.5: The Pan box

The Pan Feature

The Pan feature is active when:

- the screen is zoomed 2x or 4x, or
- the Extended Desktop is enabled.

In Edge Pan mode, as the cursor approaches the screen edge, it enters the Pan border. Within the Pan border, the screen pans as long as the cursor moves toward the screen edge. To change Pan border width, refer to the following section, "Pan Border Width."

In Cursor Pan mode, the entire screen area pans around the cursor, which remains in the screen center.

Panning Rate

To adjust pan speed, change the Maximum and Minimum panning rate settings. Initially, these settings default to faster panning as the cursor approaches your screen's edge.

For constant pan speed choose the same setting for Minimum panning rate and Maximum panning rate. This causes the screen to pan at a constant rate as the cursor approaches the screen edge.

NOTE: The pan rate changes when you change the number of colors displayed. Panning is smoothest when 256 colors are displayed.

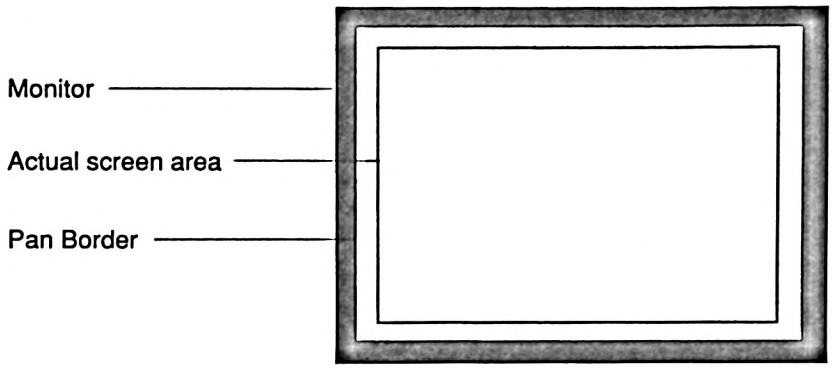


Figure 2.6: The Pan border

Pan Border Width (for Edge Pan mode)

Pan Border Width controls the area in which edge panning is active.

Thick designates a wider Pan border. **Thin** designates a thinner pan border.

Lock/Unlock Pan Toggle

Lock/Unlock Pan Toggle
⌘`

Lock/Unlock Pan sets the key sequence that enables and disables the Pan feature. In any application, entering the designated key sequence enables or disables the Pan feature. By default, the Pan toggle command is Command-` (back quote).

To toggle panning, enter Command-`. If panning is enabled, entering the Pan Toggle command disables panning. If panning is disabled, entering the Pan Toggle command enables panning.

To change the Lock/Unlock Pan Toggle command:

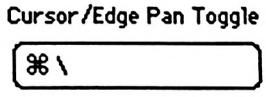
1. In the PZE Control Panel, select the Lock/Unlock Pan Toggle field by clicking once inside the field.

2. **Press any key or combination of keys.**

You can use the keypad and function keys, as well as the standard keyboard, to designate the **Lock/Unlock Pan Toggle** command.

Command-L is an example of a correct key sequence. Another example is Command-Option-H. Entering an inappropriate key sequence causes the Macintosh to beep and revert to the previous key sequence.

Cursor/Edge Pan Toggle



Cursor/Edge pan toggle sets the command that switches between cursor pan mode and edge pan mode. In edge pan mode, the screen pans only when you are moving the cursor at the screen's edge, within the pan border. In cursor pan mode, the entire image moves, while the cursor remains in the screen center.

In any application, entering the designated key combination enables or disables the Pan feature. By default, the Pan toggle command is Command-\(backslash).

To toggle pan modes, enter Command-\, or the designated key sequence. In cursor pan mode, entering the key sequence switches to edge pan mode. In edge pan mode, entering the key sequence switches to cursor pan mode.

To change the Cursor/Edge Pan Toggle command:

1. In the PZE window, select the Cursor/Edge Pan Toggle field by clicking once inside the field.

2. **Press any key or combination of keys.**

   You can use the keypad and function keys, as well as the standard keyboard, to designate the **Cursor/Edge Pan Toggle** command.

Any changes you designate in Pan settings take place immediately. These changes are saved as current settings when you click OK.

The Options Window

In the Pan/Zoom window, click **Options...** to bring up the Options window:

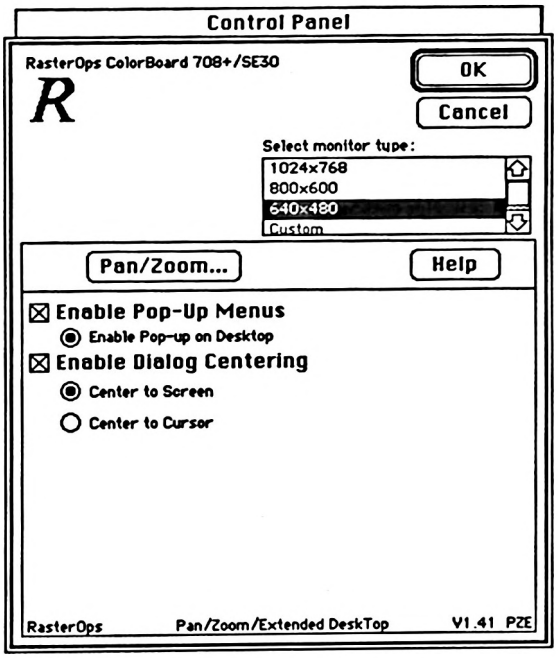


Figure 2.7: The Options window

Pan/Zoom...

This button brings up the Pan/Zoom Window.

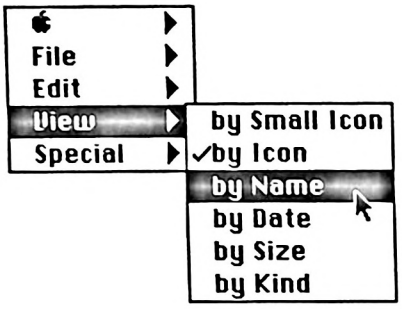
Help

This button brings up a description of the Options window.

Enable Pop-up Menus

When Pop-up menus are enabled, Command-Shift-Click brings up a Pop-up menu bar at the cursor location.

Enable Pop-up on Desktop



When enabled, clicking the mouse anywhere outside an application window brings up a Pop-up menu bar at the cursor location.

NOTE: Pop-up on desktop is only active in applications other than Finder and Multifinder.

Any changes in these settings take place immediately and are saved as current settings, if you click OK.

Enable Dialog Centering

Center to Cursor: Dialog boxes appear at the cursor location.

Center to Screen: Dialog boxes appear in the screen's upper-left corner.

Dialog centering is useful especially when the Extended Desktop and Pan & Zoom features are enabled.

Any changes you designate in Pop-up menus or dialog centering take place immediately. These changes are saved when you click OK:

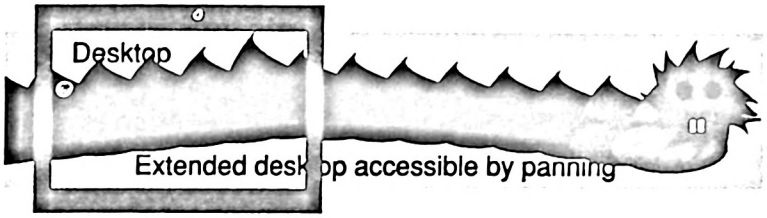


Figure 2.8: The Extended Desktop

Enabling the Extended Desktop

To enable the Extended Desktop:

1. Click once on the desired desktop size in the box labeled **Select monitor type. You may need to scroll to the desktop size you need.**

2. Click **OK.**

3. Restart the Macintosh.

   You must restart the Macintosh immediately after selecting an Extended Desktop size. Continuing to operate the Macintosh without restarting leaves the system in an unstable condition.

4. Run Monitors and, if necessary, adjust the number of grays and the color/grayscale setting.

NOTE: Depending on the Extended Desktop size, the number of color or grays you can display may be limited. The following chart shows the number of colors/grays available for each Extended Desktop size.

Extended Desktop Size	Colors/Grays Available
1024 x 768	256, 16, 4, 2
2048 x 768	16, 4, 2
4096 x 768	4, 2
8192 x 768	2

When you enable the Extended Desktop, Pan and Zoom are automatically enabled.

CHAPTER 3

The Monitors Control Panel

Contents

In this chapter:

The Monitors Control Panel

The Monitors Control Panel

The Monitors file is a standard part of Macintosh system software. As with any cdev (Control Panel Device), when the Monitors file resides in your System Folder, you can access the Monitors Control Panel through the Control Panel desk accessory.

Use the Monitors Control Panel to do the following:

- Adjust the monitor icons to reflect the physical position of your monitors.
- Designate the main screen (the screen on which your menu bar appears).
- Designate your monitor's pixel depth.

Bring up the Monitors Control Panel

1. **Select the Control Panel** from the Desk Accessory menu. All the cdevs in your System Folder appear along the left side of the Control Panel window. You may need to scroll to the Monitors icon.

2. **Click once on the Monitors icon** to bring up the Monitors Control Panel:

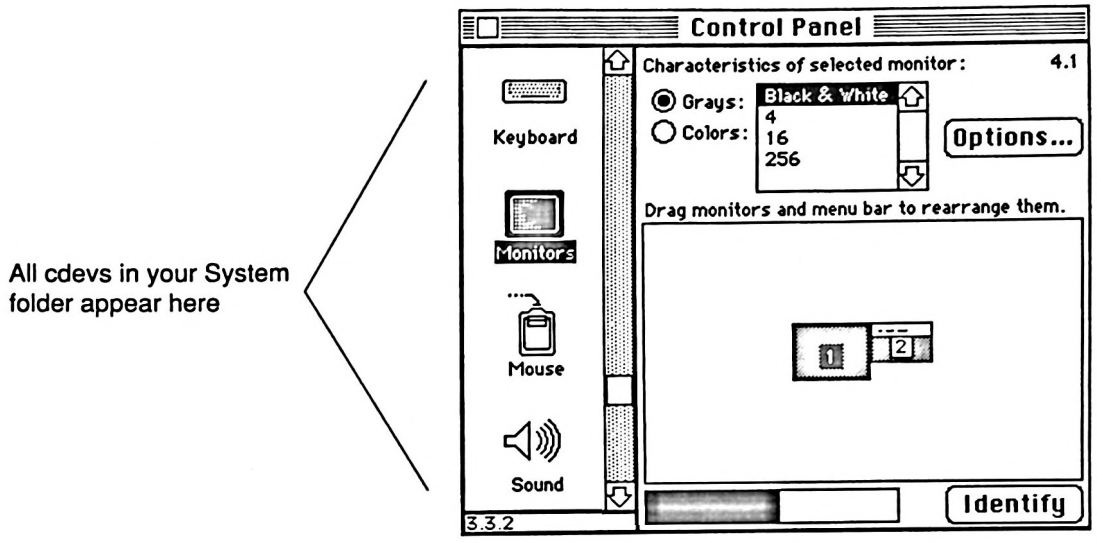


Figure 3.1: The Monitors Control Panel

Each monitor is represented in the lower-right window of the Monitors Control Panel.

Identify the monitors

The identify button produces a number in the center of each screen. This number corresponds to the numbers on the monitor icons.

Designate the main monitor

To designate the main monitor, drag the small menu bar to the appropriate monitor icon. You must restart for this change to take effect.

The main monitor is where the menu bar appears. If you do not designate a main monitor, the menu bar appears on Monitor 1.

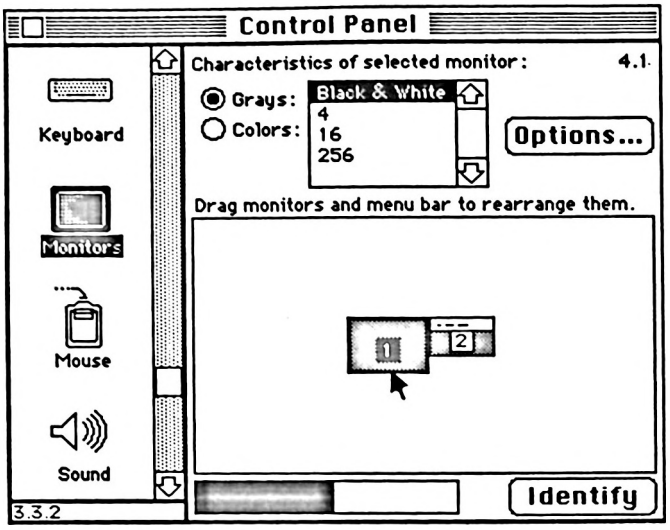


Figure 3.2: Arranging the monitor rectangles

Arrange the monitor rectangles

Arrange the monitor rectangles to reflect the physical configuration of your monitors:

1. **Click on one of the numbered rectangles** to select a monitor.

2. **Drag the rectangle** so its position and that of the other rectangles on screen matches the physical configuration of your monitors.

3. **Restart your Macintosh.** You must restart for this change to take effect.

If your screens do not "meet" when you move the cursor from one monitor to another, return to the Monitors Control Panel, reposition the monitor rectangles and restart the Macintosh again.

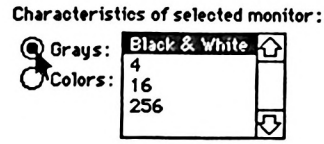


Figure 3.3: Selecting grays or colors

Select Grays or Colors

1. **Click once on the ColorBoard 708+/SE30 monitor rectangle.**

   The number of grays or colors selected for the ColorBoard 708+/SE30 monitor appears in the upper-right window of the Monitors Control Panel.

2. **Click the Grays or Colors radio button.**

   You do not need to restart for this change to take effect.

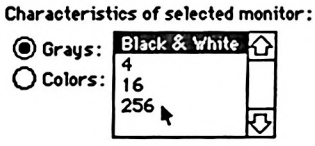


Figure 3.4: Selecting the number of colors displayed

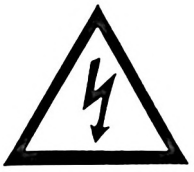
Select the number of colors or grays displayed

Click once to select the number of colors or grays you desire.

You do not need to restart for this change to take effect.

The system works fastest when you select Black & White, and slowest when you select 256.

WARNING



DEALER INSTALLATION REQUIRED

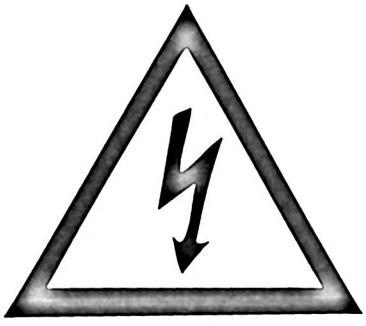
THIS PRODUCT MAY ONLY BE INSTALLED BY AN APPLE CERTIFIED TECHNICIAN

BE CERTAIN THE MACINTOSH HAS BEEN UNPLUGGED FOR TWO HOURS BEFORE YOU DISASSEMBLE IT!

The Macintosh CRT retains more than 25,000 Volts of electricity for up to two hours after being powered down.

This is sufficient voltage to kill you.

Figure 4.1 on Page 35 shows which parts of the Macintosh you should avoid touching, even after waiting two hours to disassemble it. Please carefully review this diagram and the attendant warnings and disclaimer before you attempt to disassemble the Macintosh.



CHAPTER 4

Installing the ColorBoard

In this chapter:

Initial Warnings and Disclaimer

Inside the ColorBoard 708+/SE30 Package

Installing the ColorBoard 708+/SE30

Initial Warnings and Disclaimer

Before you proceed be advised of the following:

1) LIMITS OF APPLE'S WARRANTY

If you are not an authorized Apple dealer, opening the Macintosh SE/30 for any reason (including graphics card installation) voids Apple Computer's 90-day warranty.

2) HIGH VOLTAGE WARNING

Opening the Macintosh SE/30 exposes you to dangerously high voltages that, in addition to damaging the hardware, could also damage YOU. Exercise extreme caution during the entire installation process—especially while handling the opened Macintosh. Avoid touching with a tool or any part of your body the areas shaded in Figure 4.1.

3) ELECTROSTATIC DISCHARGE

The chips on the ColorBoard 708+/SE30 card, as well as those on the Macintosh main logic board, are extremely sensitive to static electricity. Wear a grounding strap or use another method to ground yourself while installing the ColorBoard 708+/SE30 card.

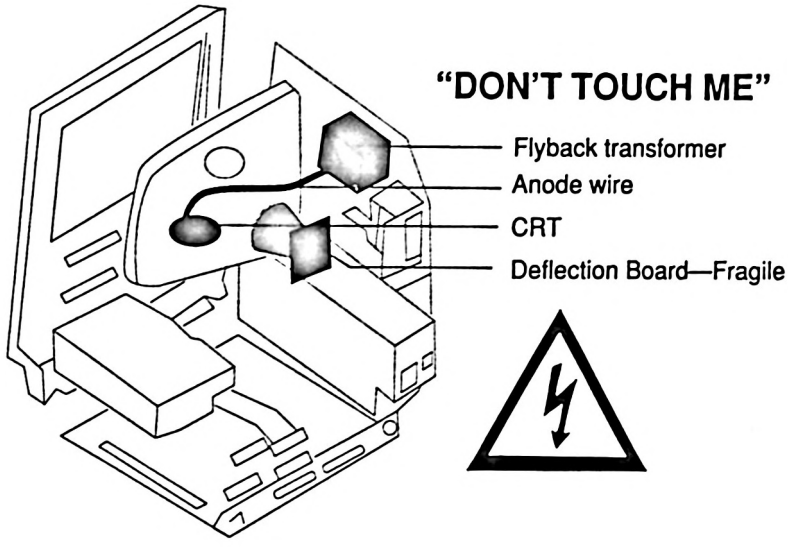


Figure 4.1: SE/30 High voltage components

4) IF YOU ARE NOT EXPERIENCED

If you have not worked with Macintosh hardware or for any reason you feel uncomfortable handling these components, DO NOT PROCEED WITH THE INSTALLATION. The installation process is delicate and potentially dangerous, and should be carried out only by a professional service technician.

Inside the ColorBoard 708+/SE30 Package

Inside the ColorBoard 708+/SE30 package you will find:

- ColorBoard 708+/SE30 card in anti-static bag

  CAUTION: Do not remove the ColorBoard 708+/SE30 card from its anti-static bag until you are ready to install it. To remove the card prematurely exposes it to static, which could significantly shorten its lifetime.

- Warranty/Registration card—FILL THIS OUT NOW!

- One 800K disk containing the RasterOps Graphics System Software

- Internal video cable and metal bracket assembly, including two metal screws for the bracket

- ColorBoard 708+/SE30 label plate

- One plastic snap-lock or thumbscrew

- This manual

Contact your RasterOps dealer if any of these items are missing.

Installing the ColorBoard 708+/SE30

Follow these steps to install the ColorBoard 708+/SE30:

NOTE: Exercise caution when you handle the opened Macintosh. Avoid touching the high-voltage and delicate components that appear as shaded areas in Figure 4.1.

1. Disconnect the power cable and all other cables from the back of the Macintosh. This includes keyboard, mouse, and any SCSI or Appletalk cables that may be attached.

2. Remove the Reset/Interrupt switch, if installed, from the left side of the Macintosh.

3. Lay the Macintosh screen-down on a well-supported, soft surface.

4. Use a long Torx screwdriver to remove the four Torx screws from the back cover of the Macintosh. Refer to Figure 4.2.

5. GENTLY use a "Mac Cracker" or similar tool to pry the case from the Macintosh SE/30.

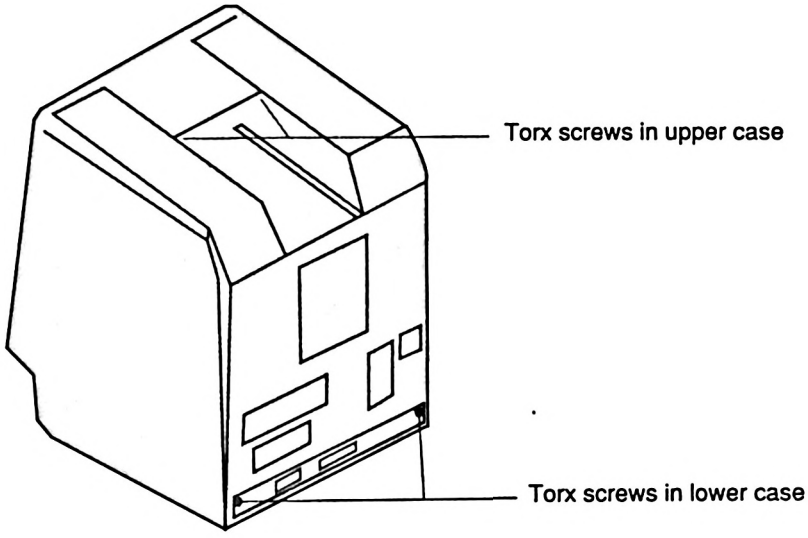


Figure 4.2: Location of Torx screws

Begin prying along the top, then alternate prying left and right sides and along the bottom.

As you pry, the CRT and motherboard remain with the front part of the case.

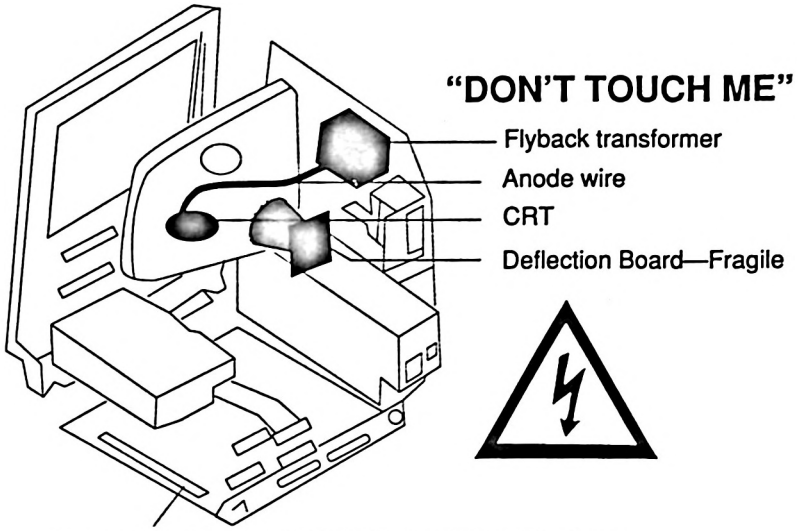


Figure 4.3: SE/30 Expansion slot

CAUTION: Parts of this assembly retain dangerously high voltage long after being disconnected from any electrical outlet. Avoid touching (with a tool or any part of your body) the areas shaded in Figure 4.3. Also, the deflection board (marked "Fragile" in Figure 4.1) is very delicate and should not be handled.

6. Locate the expansion slot along the left side of the Macintosh main logic board. Refer to Figure 4.3.

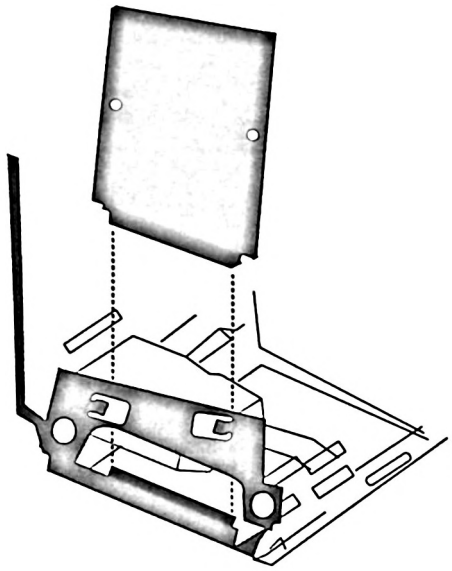


Figure 4.4: Installing the ColorBoard 708+/SE30

7. Insert the ColorBoard 708+/SE30 card into the expansion connector. The ColorBoard stands perpendicular to the motherboard. Components on the ColorBoard 708+/SE30 card face the inside of the Macintosh.

   CAUTION: The connector is keyed and fits in only one direction. It should install easily. If you encounter resistance, remove the ColorBoard 708+/SE30 card and confirm that you are seating it in the proper direction.

8. Insert the plastic snap-lock or thumbscrew into the hole at the rear of the ColorBoard 708+/SE30 card and through the corresponding metal tab in the SE/30 chassis (from the inside of the SE/30 chassis out). This secures the ColorBoard 708+/SE30 card against the Macintosh chassis.

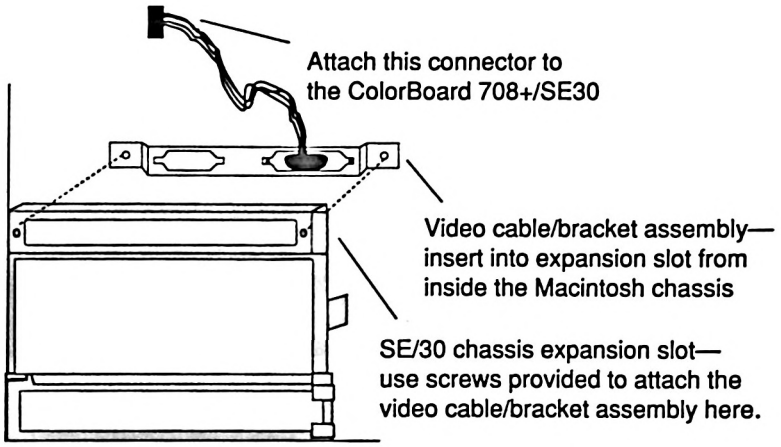

Attach this connector to
the ColorBoard 708+/SE30
Video cable/bracket assembly—
insert into expansion slot from
inside the Macintosh chassis
SE/30 chassis expansion slot—
use screws provided to attach the
video cable/bracket assembly here.

Figure 4.5: Installing the video cable/bracket assembly

Connect the Video Cable

Follow these steps to install the video cable:

1. Connect the small end of the video cable to the video connector on the ColorBoard 708+/SE30 card. The cable is keyed and will only fit in one direction. It should install easily. If you encounter resistance, remove the connector and confirm that you are seating it in the proper direction.

2. Insert the bracket containing the large end of the video cable into the inner side of the chassis expansion slot.

3. Secure the bracket assembly to the expansion slot opening, using the two screws already attached to the bracket assembly.

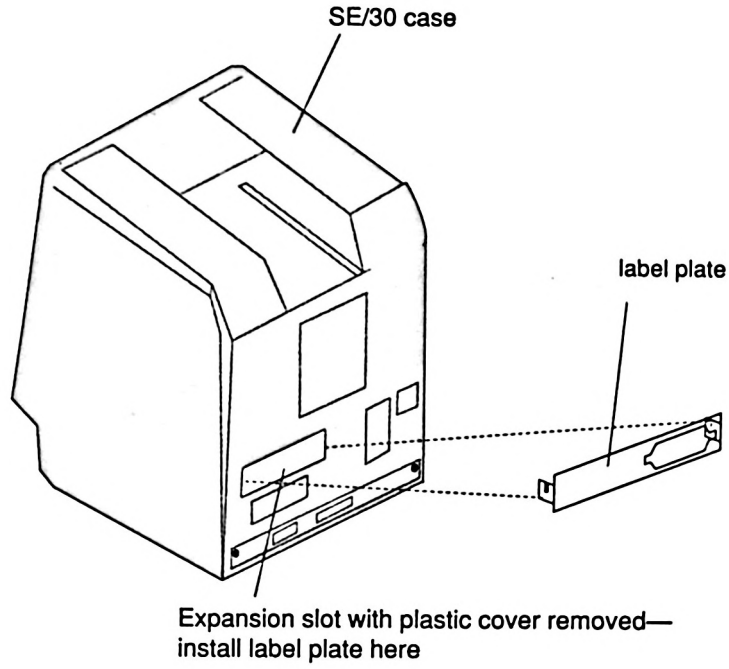


Figure 4.6: Attaching the label plate

Attach the Label Plate

1. On the back of the SE/30 case, locate the plastic expansion slot cover. Refer to Figure 4.6.

2. Remove the expansion slot cover by pushing out from the inside of the SE/30 case.

3. From the outside of the SE/30 case, insert the metal label plate provided by RasterOps into the expansion slot opening.

   NOTE: The metal tabs are divided so that on each side half the tab remains inside the SE case.

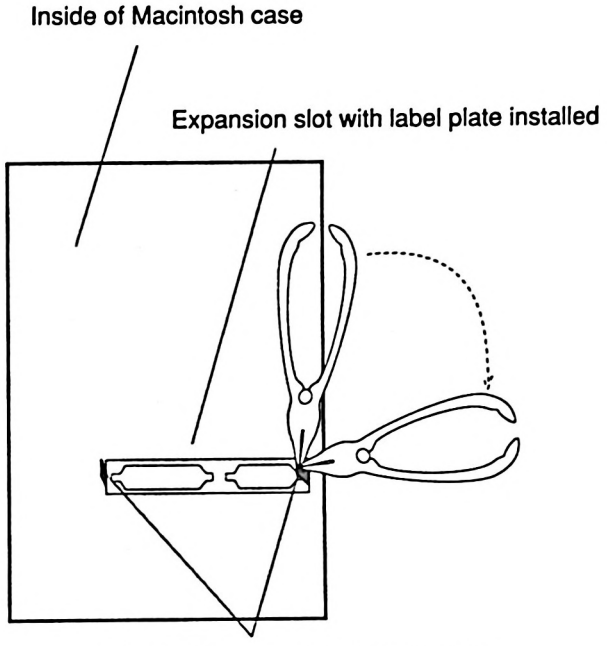

Inside of Macintosh case
Expansion slot with label plate installed
Label plate tabs—bend out as shown
to secure label plate to Macintosh case

Figure 4.7: Twisting the tabs

4. Secure the label plate by using pliers or a similar tool to bend the inner half of each tab away from the label plate.

Close the Macintosh Case

1. Place the Macintosh screen-down.
2. Replace the interference shield below the main logic board and chassis.
3. Replace the cover over the Macintosh SE/30 chassis. Gently guide the cover so that the edges meet all around as it slides back into place.
4. When the cover is securely in place, replace the four Torx screws. Install the two silver screws into the top holes. The black screws go into the two lower holes.
5. Re-attach all external cables (keyboard, mouse, SCSI) to the appropriate ports.
6. Reinstall the Reset/Interrupt switch. Insert its upper side into the two long slots, then insert the bottom into the SE/30.
7. Set the SE/30 upright.

Attach the Monitor

NOTE: No image will appear on the ColorBoard 708+/SE30 monitor until you install the RasterOps Monitors Extension and use this file to select the correct monitor size. Chapter One explains how to install the Monitors Extension.

1. Attach the external video cable to the connector you just installed.

2. Attach the cable's other end to your monitor.

3. Attach the monitor power cable and turn on the monitor.

4. Boot the Macintosh SE/30.

   CAUTION: If upon powering up you see a flash, smell smoke, or for any other reason the Macintosh does not start correctly, IMMEDIATELY power down your system and call RasterOps Technical Support at (408)562-4200.

Now that you have installed the ColorBoard 708+/SE30, refer to Chapter One to install the Pan/Zoom/Extended Desktop software.

CHAPTER 5

Troubleshooting Guide

Follow these steps to determine which part of your equipment is not functioning:

Problem: No image on ColorBoard 708+/SE30 screen.

NOTE: If you have just installed the ColorBoard 708+/SE30, you will not see an image on the ColorBoard 708+/SE30 screen until you install the RasterOps Monitors Extension file and, in software, select the correct size for your monitor.

If you have installed the software and configured the ColorBoard 708+/SE30 system, take the following steps to produce an image:

1. Be sure the monitor and the Macintosh are both receiving power.

2. Remove and reattach the video cable. If possible, use a different cable.

Problem: Trouble with Pop-Up menus.

If you are using an application that has its own Pop-up menus, these may conflict with the ColorBoard 708+/SE30 Pop-Up menus. If you encounter problems, temporarily disable the ColorBoard 708+/SE30 Pop-up menus.

Problem: Zoom command key conflicts.

If you depress the caps lock key, the ColorBoard 708+/SE30 interprets letters as though the Shift key were depressed. For example, if Command-Shift-a is the designated "Zoom in" key sequence, and you have the caps lock key depressed, typing Command-a will cause the ColorBoard 708+/SE30 to zoom. If you encounter problems, temporarily disable the Zoom feature, or designate a different Zoom key sequence.

If your problems persist, call RasterOps Technical Support at (408)562-4200.

Appendices

Chuck Kingsman 8-2-90 will send new cable.

Appendix A: Hardware Specifications

System Requirements	Macintosh SE/30
Interface	Plugs into expansion slot of Macintosh SE/30 computer.
Power	1.5 Amps at 5 Volts
Palette Size	256 colors
Display Bit Modes	1, 2, 4, or 8 bits per pixel, software selectable
Output signals	Apple Standard
Absolute Maximum Ratings	
Supply Voltage, VCC	5.25 Volts
Operating Ambient Temperature Range	+10 °C to +35 °C
Storage Temperature	-40 °C to +45 °C

Video Specifications

Resolution 1024 x 768	**75 Hz**
Pixel Timing	12.5 nS = 80.0 MHz
Horizontal Visible	1024 Pixels
Horizontal Total	1328 Pixels
Horizontal Front Porch	80 Pixels
Horizontal Sync	80 Pixels
Horizontal Back Porch	144 Pixels
Vertical Visible	768 Lines
Vertical Total	803 Lines
Vertical Front Porch	3 Lines
Vertical Sync	3Lines
Vertical Back Porch	29 Lines
Horizontal Frequency	60.241 KHz
Vertical Frequency	75.02 Hz

Resolution 800 x 600	**67 Hz**
Pixel Timing	20.0 nS = 50.0 MHz
Horizontal Visible	800 Pixels
Horizontal Total	1024 Pixels
Horizontal Front Porch	48 Pixels
Horizontal Sync	80 Pixels
Horizontal Back Porch	96 Pixels
Vertical Visible	600 Lines
Vertical Total	730 Lines
Vertical Front Porch	48 Lines
Vertical Sync	6 Lines
Vertical Back Porch	76 Lines
Horizontal Frequency	48.80 KHz
Vertical Frequency	66.66 Hz

Resolution 640 x 480	**67 Hz**
Pixel Timing	33.06878 nS = 30.24 MHz
Horizontal Visible	640 Pixels
Horizontal Total	864 Pixels
Horizontal Front Porch	64 Pixels
Horizontal Sync	64 Pixels
Horizontal Back Porch	96 Pixels
Vertical Visible	480 Lines

Vertical Total	525 Lines
Vertical Front Porch	3 Lines
Vertical Sync	3 Lines
Vertical Back Porch	39 Lines
Horizontal Frequency	35.00 KHz
Vertical Frequency	66.66 Hz

FCC Approval

This product is verified to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC rules.

Operation of this equipment in a residential area may cause unacceptable interference to radio and TV reception, requiring the operator to take whatever steps are necessary to correct the interference.

Appendix B: Video Connector Pinout

Pinout of 15-pin Video Connector:

1 Red Shield
2 Red
3 No Connection
4 No Connection
5 Green/Internal Sync
6 Green Shield
7 No Connection
8 No Connection
9 Blue
10 No Connection
11 No Connection
12 No Connection
13 Blue Shield
14 No Connection
15 No Connection

Appendix C: Warranty

RasterOps Corporation ("RasterOps") warrants this product against defects in materials and workmanship for a period of ONE (1) YEAR from the date of original retail purchase.

If you discover a defect, RasterOps will, at its option, repair or exchange the product at no charge to you, provided you notify your RasterOps' Authorized Dealer ("Dealer") during the warranty period. Return the product (transportation and insurance charges prepaid) to Dealer with name, company name, address, telephone number, a detailed description of the problem, and a copy of the bill of sale bearing the RasterOps' serial numbers as proof of date of original purchase, for each product returned for warranty service. Before returning product, remove all non-RasterOps RAM, accessories, and options. Neither RasterOps nor Dealer can be liable for the return or care of any non-RasterOps products, nor accept responsibility for loss or damage of product in transit.

This warranty does not apply if the product has been damaged by accident, installation or removal of product, abuse, misuse, misapplication, accident, neglect, fire, water, lightning, or other acts of nature, failure to follow supplied instructions; has been modified, repaired or attempted repair by unauthorized personnel without the written consent of RasterOps; has a serial number that has been removed, modified, or defaced. RasterOps reserves the right to use remanufactured, refurbished, or used parts and components in making warranty repairs.

RasterOps' video products are designed to work with the Macintosh, Sun and IBM computers. Certain features of third-party software or hardware designed for the host system may not be available when used with this product. Accordingly, RasterOps does not warrant or represent that all software or hardware will function error free when used in conjunction with this RasterOps video product.

THIS WARRANTY IS IN LIEU OF ALL WARRANTIES, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED. ALL EXPRESS AND IMPLIED WARRANTIES FOR THIS PRODUCT, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES, EXPRESS OR IMPLIED, WILL APPLY AFTER THIS PERIOD. RASTEROPS SHALL NOT BE LIABLE FOR ANY LOST PROFITS, DAMAGE TO OTHER PROPERTY CAUSED BY ANY DEFECT IN THIS PRODUCT, DAMAGES BASED UPON INCONVENIENCE, LOSS OF USE OF THE PRODUCT, LOSS OF TIME, COMMERCIAL USE, INCIDENTAL AND/OR CONSEQUENTIAL DAMAGES FOR THE BREACH OF ANY EXPRESS OR IMPLIED WARRANTY, INCLUDING DAMAGE TO PROPERTY AND, TO THE EXTENT PERMITTED BY LAW, DAMAGES FOR PERSONAL INJURY, EVEN IF RASTEROPS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Some states do not allow the inclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

RasterOps Corporation
RMA # XXXX (number obtained from RasterOps)
2500 Walsh Avenue
Santa Clara, CA 95051
USA
(408) 562-4200 Tel.
(408) 562-4065 Fax

Notes

Notes

Notes

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(801) 785-5750

~~1-800-729-2656~~

Allen

RasterOps®

We're Changing The Way People Look At Computers™

RasterOps
2500 Walsh Avenue
Santa Clara, CA 95051
TEL 408 562-4200
FAX 408 562-4065
TELEX 446510 RASTEROPS SCLARA

Pin-Outs—Computer Ports

External Video Connector

Pin	Signal	Signal Description
1	RED.GND	Red video ground
2	RED.VID	Red video
3	CSYNC/	Composite sync
4	MON.ID1	Monitor ID, bit 1
5	GRN.VID	Green video
6	GRN.GND	Green video ground
7	MON.ID2	Monitor ID, bit 2
8	NC	No connection
9	BLU.VID	Blue video
10	MON.ID3	Monitor ID, bit 3
11	C&VSYNC GND	Composite & vertical sync ground
12	VSYNC/	Vertical sync
13	BLU.GND	Blue video ground
14	HSYNC.GND	Horizontal sync ground
15	HSYNC/	Horizontal sync
Shell	CHASSIS GND	Chassis ground

This DA-15 connector is present on the Macintosh LC, IIci, and IIsi. This video connector supports all Apple Macintosh monitors except the Two-Page Display.